

From the Author to Doctor Anderson

A N
A N S W E R

TO A PAMPHLET PUBLISHED BY
THE EARL OF DONDONALD,
ENTITLED,
T H O U G H T S
ON THE
MANUFACTURE AND TRADE OF SALT,

A N D
On the COAL-TRADE of GREAT-BRITAIN, &c.

W I T H
A particular Examination of his Mode of Refining British Salt.

TOGETHER WITH
REMARKS on the WRITINGS of DR. ANDERSON,
And OTHERS on the same Subjects.

BY R O B E R T R O E.

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ADVERTISEMENT.

WHEN Lord DONDONALD presented the Publick with the production before us, containing his Improvements in the Art of Salt-making, he distinguished himself by charges against Ireland exceedingly illiberal:—but they were withal *so ill supported*, as to merit little regard, and create no alarm.

But marking its progress, and seeing that the rank of its Author, *alone*, had stamped it with consequence sufficient to mislead, not only several of his countrymen, but other persons still more respectable, who look no deeper than the surface of bold assertions; it became, I say, necessary to pay it some attention.

And observing that his Lordship offers the love of his country, for a justification of his illiberality and injustice to Ireland, the Writer of these sheets, no less a lover of *his* country than his Lordship, offers the same reason for detecting, and confuting these charges in the first instance;—and for shewing the futility of this pretended improvement in the second.

It may also be necessary to take notice, That when this many-faced mathematical—mercantile—political—chemical and mechanical production appeared, it contained matters not generally understood, which accounts for its not being taken notice of sooner, as well as for its falling to the share of the Author of these pages to reply to it, rather than to others more capable, as writers, of bestowing upon it the reprehension it deserved.

RINGSEND, near DUBLIN,

JUNE 29, 1786.

A D V E R T I S E M E N T

WHEN Lord Cornwallis presented the Indian Bill to the House of Commons, he was met by a storm of opposition. The members of the House, who had been led to expect a measure of great importance, were disappointed. The bill was rejected, and the House adjourned. The bill was then introduced in the House of Commons, and was again rejected. The bill was then introduced in the House of Commons, and was again rejected. The bill was then introduced in the House of Commons, and was again rejected.

E R R A T A.

Page 12, Line 21, for Salt, read Sale.

24, or, read and.

Page 13, in the Not, his Majesty, read her Majesty.

Page 30, Line 7, dele the word India.

A N
A N S W E R
T O

A P A M P H L E T, &c.

E N T I T L E D

Thoughts on the Manufacture and Trade of Salt, &c.

THE Noble Author seems to labour zealously, in order to establish an opinion in England, that Ireland manufactures an immense quantity of salt, merely for the purpose of smuggling it into Great Britain;—and to give colour to this charge, has assumed calculations, perhaps the most futile, uncertain, and unsupported, that were ever offered for argument, or made the ground of national calumny.

B

He

He tells us (a), “ That the annual revenue
 “ arising from the Salt-duties of England,
 “ when at 3s. 4d. per bushel, was upwards of
 “ 700,000l. that the number of bushels of
 “ salt *used in England*, according to the above
 “ duties, is 4,200,000; the number of inhabi-
 “ tants in England supposed seven millions;
 “ each person, on an average, would, in
 “ household use, salting meat, &c. consume
 “ $33\frac{1}{2}$ lb.

That (b) “ On an average of twelve years,
 “ preceding the 5th of April, 1783, the quan-
 “ tity of salt made annually in Scotland a-
 “ mounts only to 349,512 bushels, and the
 “ quantity of foreign salt imported for the
 “ fisheries to 85,179 bushels; total, 434,691
 “ bushels.

“ The number of inhabitants estimated in
 “ Scotland at 1,500,000; each person, ac-
 “ cording to the above quantity of 434,691
 “ bushels, is supposed, for household use, salting
 “ fish, meat, &c. to consume only $16\frac{1}{2}$ lb. in-
 “ stead of $33\frac{1}{2}$ lb. the quantity used in Eng-
 “ land.”

(a) Thoughts on the Trade of Salt, &c.

(b) Ibid.

That

That is, in short, he tells us, that if all the salt made in England was divided amongst its inhabitants, they would each share $33\frac{1}{2}$ lb. as appears by *their gross salt duties*; but that if all the salt made or imported into Scotland, *for which they pay duty*, was divided amongst the people in like manner, they would share but $16\frac{1}{2}$ lb. “ And, says he (c), If equal quantities of salt are supposed to be consumed in “ Scotland and England, according to their “ respective number of inhabitants, there must “ be used 900,000 bushels; consequently “ there is smuggled into Scotland, from *Ireland* or elsewhere, 465,303 bushels (i. e. “ 11,632 tuns) annually, whereby the gross “ revenue, at the present duty of 1s. 6d. per “ bushel, is defrauded of the sum of “ 34,898l. 3s. 6d. sterling *per annum*.”

Here are Data assumed; calculations and conclusions with a vengeance.

If, says he, equal quantities of salt are *supposed* to be consumed in Scotland as in England, according to their respective number of inhabitants, &c.—But, excepting his Lord-

(c) Thoughts on the Trade of Salt, &c.

ship,

ship, who ever supposed any such thing? And if it may be allowed, to awaken the Noble Lord's reflection, I would beg to know from him how the people of Scotland could consume a proportion of salt equal to the people of England?—The Scotch are not remarkable for their export of salt provisions; neither have they the navy of the empire, or the garrisons, to supply with salt provisions. On the contrary, we know that all the redundant cattle of Scotland are sold alive, for the consumption of the English market: neither are the general modes of living in England and Scotland so much alike as to lead his Lordship into so singular an error.

Yet on this strange supposition, he draws a not less extraordinary conclusion, and says, *Consequently* there is smuggled into Scotland, from Ireland or elsewhere, 11,632 tuns of salt annually.

But the grand deceit of his calculations does not lie here; it lies in supposing all the salt made in England to be consumed by the inhabitants.

He tells us he founds his calculations on the annual gross revenue arising from the salt duties of England.

Now

Now those *Gross* duties are, in fact, the duties of all the salt made in England, whether exported or consumed, and arises as soon as the salt is made and committed to the charge of the salt-officers in the stores, at which time the duty must either be paid or bonds passed for it, from which arises the gross salt revenue of England. But if this salt is exported the duty is drawn back, or the bonds discharged ; hence appears the fallacy of drawing any calculation from so uncertain data as the gross salt revenue.

He tells us the duty was at this time but 3s. 4d. per bushel, and the gross duty was 700,000l. ; the salt corresponding, or by which this sum was produced, is 4,200,000 bushels, which he divides as was before observed amongst the people of England, producing the extraordinary allowance of $33\frac{1}{2}$ lb. to each.

The duty at this time is 5s. per bushel on salt in England, consequently the gross salt revenue must be about one million sterling ; yet even now the neat salt duties do not amount to 350,000l. per ann. which sum, had he taken it, would not have produced a greater proportion of salt for the English than what he allows the Scotch, i. e. $16\frac{1}{2}$ lb. with which quantity we conceive

ceive the latter are very amply provided, *if not over-stocked*, for their shipping generally take Irish provisions, and they can have salt for their fisheries from Spain or Portugal at very small duties under certain restrictions.

Yet, such are the arguments devised by the noble Lord, to shew, that the Scotch are chiefly supplied with salt by illicit trade—and thus he proceeds :

“ The Irish are so sensible of their own interest, and of the favour conferred on them by the British government, in supplying them with coals and rock-salt duty free, that they think they can do no less in return than supply the inhabitants of the West coast of England and Scotland, likewise duty free, with the manufactured produce of the rock salt they get from England, charging, as is reasonable, freight, commission, and the expences of manufacture ; and accordingly exclusive of what is sent to England, three-fourths of the West of Scotland is supplied with *smuggled salt of Irish manufacture.*”

And again, (d) “ The indulgence granted to the Irish by the duty free exportation of

(d) Thoughts on the Trade of Salt, &c.

“ rock

“ rock salt, and the very trifling duty upon
 “ coals, must, if allowed to continue, capi-
 “ tally hurt many British manufacturers ; and
 “ among other advantages, may be deemed a
 “ *parliamentary reward, or bounty to the Irish*
 “ *for refining British rock salt, and smuggling it*
 “ *into Great Britain.*”

The noble Lord would be jocular, but it is illiberal jocularly. The Irish are grateful for the favour done them ; and his Lordship would have it the English grant them parliamentary reward for their mal-practices ; yet has not produced one argument in support of all these prompt charges, better than suppositions—the result of prejudice and slender information.

If three-fourths of the West of Scotland are supplied with Irish salt, as he would insinuate, or that so many thousand tons are by illicit trade imported, there must annually be some thousands of tons seized by land and water, as they have many cruizers, as well as innumerable officers belonging to Scotland. These seizures are all returned to the proper office at Edinburgh, which his Lordship has not done, but could readily have had an account of, and no doubt would as readily have favoured us
 with,

with, had such information made for his purpose, in magnifying this pretended evil, for which we shall presently find him exercising his wisdom to provide a remedy.

“ The export of rock salt (e) to Ireland or
 “ elsewhere, (says he) should be strictly prohi-
 “ bited. Were such an act passed, and the
 “ Irish made to pay the same duty for their
 “ coals as the people of London, the evil com-
 “ plained of would be effectually cured, that
 “ is to say, if the noble Lord would spake out,
 “ *for the Scotch being smugglers, the Irish should*
 “ *be punished.*”

Again, “ The above *measure* as it will cut up
 “ root and branch, the smuggling of salt from
 “ Ireland is recommended as a means of in-
 “ creasing the revenue.”

Here indeed the noble Lord in displaying the depth of his political knowledge, unfortunately shews how slenderly he is acquainted with the subject he has undertaken to reform. For had he known that Ireland imports a large quantity of white salt from England annually, perhaps 15,000 tons or more, he could not be so sim-

(e) Thoughts on the Trade of Salt, &c.

ple as to conceive that prohibiting rock salt, being sent to Ireland, would prevent smuggling, English salt being sold just as cheap in Ireland, and being as well adapted for smuggling as salt of Irish manufacture, which seems to be the sole object of his Lordship's alarm.

Ireland imports annually near the quantity of salt above-mentioned from Spain and Portugal, which might also be an object for smuggling, if smuggling could be practised with so much facility as he would teach his readers to believe. And if England possessed no better security against smuggling than what the noble Lord is able to devise, she would be equally annoyed from all her neighbours, France, Jersey, Guernsey, and even Scotland herself, who has long been suspected of a *small* propensity to smuggling, would find it much more to her advantage to carry on an illicit export to England than an illicit import from Ireland.

Yet so happy is our Author in his ideal remedy, that he exultingly concludes, “ An (f) “ effectual means having been pointed out for “ preventing the smuggling of salt from Ireland, “ consisting in giving the Irish no rock salt to “ smuggle back to us, and making them pay “ duty for their coals.”

(f) Thoughts on the Trade of Salt, &c.

C

I am

I am by no means an advocate for smuggling of any denomination, on the contrary, reprobate the idea of smuggling salt from Ireland to Great Britain as much as the noble Lord can possibly do; and have no doubt but the *Welsh* and *Scotch particularly*, buy salt in Ireland, clear out for the fisheries, and carry it in small craft to their respective countries, for where there is temptation to illicit trade, smugglers will never be wanting. But at the same time, can allow no merit to misrepresentation, into which the warmth of his Lordship's patriotism has not only carried him, but into manifest absurdity. He says, the revenues of Scotland are defrauded of 34898l. 3s. 6d. annually, (to shew his accuracy) by the salt he supposes to be smuggled from Ireland, (that is, if we allow the Scotch to consume near three times the quantity of salt they can possibly have occasion for), and that three fourths of the West of Scotland are supplied with salt from Ireland, now the West Highlands of Scotland, with all the Western Islands, are not computed to contain near one-third of the inhabitants of the kingdom, consequently the other two-thirds which are not supplied from Ireland, ought to produce a salt revenue to Scotland of above 70000l. per ann.—But what degree of respect is due to his Lordship's *calculations* and *information*, when we find that the whole neat
salt

salt duties of Scotland does not amount to 12,000*l.* per ann. (g)

If we believe the account which the noble Lord has himself given of the quantity of salt manufactured in Scotland, (h) (or perhaps a much more correct one that has been since given), it would appear to pay a duty of about 30,000*l.* per ann. without any regard to fishery or imported salt : but what a falling off is here, when it does not, as was observed before, actually pay 12,000*l.* per ann. And if his Lordship's zeal for reformation had not taken a very partial turn, he need not have gone from home to have distinguished himself for the interest of his country, in detecting defalcations of the revenue. But it is a maxim in law, that will hold good in politicks, that they who prove too much, prove nothing at all, which seems to be the case with the noble Lord, for had he been more modest in his assertions, and had he, instead of near 12,000 tons of salt, calculated that the Scotch smuggle about a tenth part of that quantity, though he might have exceeded the bounds of truth or just representation, he would

(g) Report of the Fishery Committee, British House of Commons, 116.

(h) Hogg's Account of the Salt made in Scotland, before a Committee of the House of Lords of Great Britain.

not have exceeded that of credibility—but just representation would not have answered his purpose. The Grievance must be momentous, to merit his Lordship's notice, or perhaps what was more to the purpose, to render the noble Lord's *patriotism* worthy of the notice of government.

His Lordship, however, retains the honour of a chief, and seems to be implicitly followed by his countrymen, (i) accordingly we find another Scotch manufacturer of salt informing a committee of the House of Lords of Great Britain, that Irish salt is sold in Glasgow at 2s. per bushel, while Scotch salt of inferior quality sells at 3s. per bushel. This tale seems to carry manifest absurdity upon the face of it; for the object of all illicit trade is extraordinary gain. But none or little gain could be had by such a sale of smuggled salt as is here described. Can it be believed, that salt purchased in Ireland, which in case of such salt must be taken to Greenock or Port Glasgow, reshipped into small craft to be carried to Glasgow—or dragged between twenty or thirty miles through the country, in every stage exposed to expence and seizure, yet sold at a *price* totally inadequate to the charges and risque it runs—which circum-

(i) Gaven Hogg.

stance,

stance, or want of profit alone, must even be a sufficient security against smuggling.

It is almost needless to add, that this fact is quite unknown to some of the most intelligent people of Glasgow, with whom I have lately conversed upon the subject, who, on the contrary, assert, that no part of Scotland seems less acquainted with Irish salt than Glasgow, nor is there any part where the laws respecting salt are more strictly attended to.

But the person who gives this account is one of those who petitioned against the regulations in trade which were likely to be established between Great Britain and Ireland, and, like the sagacious Wedgwood (k), was panic-struck with the danger that might in future attend his trade; this good man, seeing what his superiors had done, thought he could not do less than throw in his mite against those alarming Irish, whose future consequence he conceived so much reason to dread.

(k) Mr. Josiah Wedgwood, *Potter to his Majesty*, foresaw that the Irish will be able to supply the East India ships with pottery ware 40 or 50 per cent. cheaper than they could be supplied from Staffordshire;—and that they may in future invent pottery to supply the English market.

The evil influence of the noble Lord's example is still more fully evinced, in misleading a gentleman of Dr. Anderson's abilities ;—who, in a Report he has made of the State of the British Fisheries, &c. to a Committee of the English House of Commons, condescends to become an humble copyist of even his Lordship's errors ; and, with these cheap-acquired materials, advances the following particulars :
 “ (1) The Irish, says he, manufacture and *boil up*
 “ British Rock Salt at a very moderate price ;
 “ and this salt being charged with a duty of
 “ *only 3d. per bushel in Ireland*, can be sold so
 “ very much lower than British-made salt, as
 “ to lay a foundation for a smuggling trade,
 “ &c.”

Had the Doctor taken a little more pains to have made himself acquainted with his subject, he might have said the Irish pay no duty at all for their manufactured salt, which would have been still more to his purpose in qualifying them for smugglers. Yet notwithstanding this, and every other indulgence which he seems to envy them, they are not able to manufacture so cheap as British-made salt can be imported, by more than 20 per cent. ; nor could the manufacture of salt subsist in Ireland, but for the

equalizing duty which British manufactured salt pays upon importation. For it should be observed, that the Irish pay two heavy freights for their raw materials, whereas the English for manufactured salt pay but one freight. The English have another advantage, still more considerable, in making their salt for exportation from brine, which they pump up out of the earth, at an inconsiderable expence, while the Irish on the other hand are obliged to purchase rock-salt for their manufacture at a considerable expence.

Dr. Anderson also reports, that a person in the Isle of Skye told him he had imported in one year, from Ireland, 972 tons of salt; and that he was not the only importer in the island. This account must be exaggerated; but whether from the vanity of the merchant importer, or through the prejudices of the relator, we shall be the better able to judge when we see the conclusion the learned Doctor draws from it.

“ (m) Suppose (says he after his patron) that
 “ 500,000 persons in England, and as many in
 “ Scotland, are now supplied with Irish salt;—
 “ the duties would be about 80,000*l.* per ann.;
 “ for if 7,500,000, supposed to be in England,

(m) Note to the Fishery Reports, 158.

“ seven

“ seven millions use British salt.—It appears
 “ that the salt-duties paid by England at pre-
 “ sent are about 700,000l. per ann. ; hence
 “ 500,000 persons should yield 80,000l. and
 “ the same number by the Scotch duties yield
 “ about 30,000l. in all 110,000l.”

By this strange farrago of suppositions, ground-
 less assertions, and false calculations, the Doctor
 must suppose his Readers incapable of calcula-
 tion, as well as void of common information.

He first adopts Lord Dondonald's error, of
 supposing the salt duty of England to be
 700,000l. which we have already shewn does
 not amount to half the sum, and says, if
 7,000,000 of people pay 700,000l. salt duty,
 500,000 people should pay 80,000l. Here the
 Doctor errs in his calculation, it should be but
 50,000l. and the same number of Scotch should
 pay 30,000l. Here he errs again, for as the
 English duty is 5s. per bushel, and the Scotch
 duty but 1s. 6d. the 500,000 Scotch should
 pay but 15,000l. Thus we find the Doctor
 blinded by prejudice, stumbling from error to
 error, and from one absurdity to another. If
 what he advances was truth, which is, that
 500,000 of the Hebrides and Highlanders of
 Scotland were supplied with Irish salt, how does
 it

it follow from thence, that the like number of English are supplied in the same manner, where the police is so exceedingly different? Or how can the revenues of Scotland lose either 30,000 or 15,000l. per ann. by one-third of her inhabitants being supplied from Ireland, when the whole neat salt duties of Scotland, does not, according to his own account, (n) exceed 11,000l. per ann.? The Doctor says, that the people of Skye import a large quantity of salt from Ireland, so they may also do from France, Spain, or Portugal, for the use of their fisheries; besides which they have very little occasion for salt, and for which the duty intended by law is very small. He says $2\frac{1}{2}$ d. or $2\frac{3}{4}$ d. per bushel, but he is wrong even in this, for they pay but $1\frac{3}{4}$ d. $\frac{1}{8}$ per bushel of 84 lb. or 7s. 4d. for 50 bushels; (o) which if paid under the strictest regulations, would be a matter of very small moment to government, and perhaps be more eligible that they should pay no duty at all. He should consider that the circumstances are exceedingly different between the island of Skye and Scotland, and still more so between Skye and England. (p) When the whole island of Skye and the island of Lewis, the two largest of the Hebrides, are permitted to com-

(n) 204. Small edition.

(o) Fishery Reports, 8.

(p) *ibid.* 406.

pound for their duties of ale, malt, spirits, candles, leather, soap, &c. with the districts of Invernes and Ross, at 15l. per ann.; nor can these poor people, (q) (as an elegant writer describes them, *under the penury of malignant regions*) be envied for any advantage they can derive from a relaxed police.

The Doctor, however imperfectly acquainted with his subject, has yet promptitude enough to offer instructions to Parliament. (r) “ Let
 “ rock salt, says he, be permitted to be ex-
 “ ported to Ireland in British bottoms only, and
 “ navigated by British seamen—(*Not accounting*
 “ *Ireland included under the appellation of Bri-*
 “ *tish*) on paying the same duties and under the
 “ same regulations as for Scotland—by that
 “ means the Irish would not be able to under-
 “ sell us in the salt trade, and the smuggling in
 “ that article would be entirely prevented.”

Such illiberal advice wears an ungraceful appearance in a British subject, distinguished by what appellation he may:—For the Act of Navigation, 12 Char. II. expressly declares, that *Irish seamen* and *Irish shipping* shall be considered as *English*. And although by subsequent acts

(q) Doctor Johnson.

(r) Fishery Report, 158 and 163.

Ireland has been unfavourably dealt with ; yet, that Irish seamen and Irish ships should be considered as British, has been held inviolate for a long series of years—and is the great *bond of union* between the two nations—nor can a friend of the constitution, whether Briton or Irishman, look upon an attempt to *divide it asunder*, without indignation.

Ireland, individually taken, should be jealous of her own interests—it is wise—it is just to be so. A county, nay, a parish, has a detached interest to protect—but in the grand scale of political union, when opposed to the other states of Europe—I wish every Irishman to consider himself a Briton—a son of the same common father, embarked in the same cause—and the water between him and the British shore, not to be broader than the Tweed.

“ And the smuggling of salt, says the Doctor, would be entirely prevented.” This is another crudity of the noble Lord’s which the Doctor adopts, without seeing its absurdity, but having before exposed the puerility of this idea, more need not be said upon it.

It is not easy, however, to conceive what advantage the Doctor could hope to derive from

the restrictions *dictated* in favour of *what he calls British bottoms and British subjects*, except that through his want of better information, he supposes rock salt to be exported to Ireland without any regulations whatsoever. For had he known that both the shipper in England, and the captain that carries rock salt, are jointly bound in a penalty equal to the full duty of white salt in England, to land it in Ireland; and that a certificate thereof must be returned from his Majesty's officers in Ireland before the bond can be discharged; he would not, I say, consider it of any consequence on what bottom it was shipped, or by what seamen it was navigated; with regard to any abuse in their power to commit, much less offer such advice to the British Parliament, against whom, from an idea of his instructions being disregarded, he thus pettishly declaims—" *The Irish*, says he, *no doubt will complain, and do it more loudly, as they have found such clamours have been before attended with success—but if the British Parliament can be prevailed upon to sacrifice the interest of their constituents, it is unnecessary for him to attempt to increase the prosperity of Britain, as his efforts must prove fruitless and vain.*

We may perceive from this disrespectful harangue, that due regard has not been paid to
the

the Doctor's merit, and for which reprehension is not less due to him, than for his invidious and unprovoked attack upon the interests of Ireland, without tending in any measure to remove any impolitic restrictions which may impede the prosperity of his country. Ireland has nothing to do with such restrictions—she well knows the weight of impolitic restraints having but just emerged from oppressions, much more humiliating than those that Scotland can complain of.

In a late voluminous production with which the Doctor has favoured the public, composed principally of the Fishery Reports before mentioned, with alterations and additions, we find him abandoning the lessons of the noble Lord, and proceeding on his own account: He now states, instead of 700,000*l.* that the gross annual salt revenue of England is 900,000*l.* (s) and that the neat duty is but 250,000*l.* per ann. and that the gross annual salt revenue of Scotland is 36,000*l.* and the neat duty not more than 11,000*l.* per ann. and says withal, that above two-thirds of the gross revenue is lost in *management and drawbacks.*

(s) Lord Dondonald states that from Michaelmas 1783 to 1784, the neat duty was 332,735*l.* 16*s.* 8*d.*

From

From the Doctor's usual inaccuracy, we can repose but little confidence in his statements; but if this was really the case,—in England, where the export of white salt so much exceeds the home consumption, we must presume the drawbacks will account for the difference.

In Scotland however, where there is no exportation of salt, and but little of their own salt used in the fishery, there are next to no drawbacks, consequently 36,000*l.* being reduced to 11,000*l.* must be accounted for in some other manner, for which we must refer to the Doctor, who has still something more extraordinary to say.

For (u), after adding what he calls the neat duties of England and Scotland together, making 261,000*l.* for the purpose of bringing an equal charge of criminality, he roundly asserts, *that the people actually pay near four times as much on account of the tax as goes to the revenue*; and this without any regard to the *drawbacks* on the salt exported from England, which the minute before he states as the cause of the difference.

And he proceeds, (w) “What will it be said becomes of the residue? The answer is plain,

(u) 207.

(w) Ibid.

“ It

" *It goes into the pockets of smugglers ;*" that is to say, about 675,000*l.* per ann.—He told us before, that he was not in the secrets of the trade ; it must be confessed that he then told truth, and we would have allowed him to say, that he was equally ignorant of every other part of it ;—but such extravagance needs no comment.

The Doctor, far from being a good politician, floats over the surface of political knowledge ; and, without ever condescending to take a peep at what's beneath him, we find him inveighing against the bad policy of England, in purchasing her salt provisions from Ireland—and with his usual candour says, (x) "*tho' beef or pork could be afforded fresh at the same price in Britain as in Ireland.*"—And again, "*Britain loses in the duty on salt 12*s.* per barrel, on every barrel of beef or pork she purchases from Ireland.*"—It is necessary to inform the Doctor, that the beef and pork of Ireland used in the provision-trade is usually bought from 1½*d.* to 2¼*d.* per pound, and then to ask him whether any such prices are known in England, notwithstanding their being kept down by the supply of Irish provisions ? and, if it was not for this supply, what price must the English

(x) Reports, 49.

manufacturer and merchant pay for provisions to supply their demands?

The grazier, the slaughterer, the salter, and all persons of that description, may have their private views intrenched upon by keeping down the price of provisions; but there is no person who is liberal enough to take in the general interest of England at a view, but must allow that her good lands are much more profitably employed than in breeding or feeding cattle for salt provisions.

It is the great misfortune of Ireland, to have her best lands occupied in this unprofitable trade, which may be classed with spinning worsted and linen yarn for English webs; and there is no Irishman, who regards the true interest of his country, but hopes to see her exports more respectable than those of salt-beef, green hides, and yarn.

Britain loses 12s. in the duty of salt, upon every barrel of beef or pork she purchases from Ireland.—The Doctor seems not to be in this secret either; for though the Irish use a profusion of salt in their provision-trade, they use but little more than half the quantity that would amount to this duty to each barrel, which I
have

have stated in another place to 78lb.—The price of salt provision, whether enhanced by the high price of the meat or the duty on salt, must principally fall upon the British islands abroad ; and for so much as Government purchase of these provisions, they sustain no loss, as what is lost in duty is saved in price. But the Doctor, in order to render his assertions of the same complexion, and cover his extravagance, in saying that English fresh provisions can be afforded as cheap as Irish, states the price of Irish salt provisions *at only* 3l. per barrel, although it is a well known fact that Irish beef often sells under 40s. and seldom exceeds 48s. per barrel.

From what we have seen of the Doctor's political speculations, it may be judged how much the publick are indebted to him. Let me next take notice of some improvements he has suggested in the business of curing herrings, a subject on which he has bestowed much time and attention. He informs us, in an addition to the work before mentioned, (page 307) that the people of the Western Islands of Scotland, when they are in want of salt, frequently save their herrings by hanging them upon cords in their barns, (which are generally made of wicker-work) and that they are saved very well, if the weather be *cold* and *dry*.

This may be possible under the circumstances, if the herrings are shotten, or are of a very lean kind;—but here comes the improvement:—
 “Possibly (says the Doctor) were these dried
 “by the help of *heated air, without smoke*, they
 “would become a favourite article of food,
 “and would be particularly valuable for sea-
 “stores, furnishing fresh food for seamen in
 “long voyages, when salt meat has become
 “pernicious.”

This ingenious thought carries strong marks of the Doctor’s philosophical knowledge; for, when all other speculators supposed that heated air (in effect an artificial hot climate) would excite rapid putrefaction, the Doctor with singular address applies it, to check putrefaction; although it does not accord quite well with what he introduces presently after, viz.

“(y) The herring is a fish that becomes very
 “soon tainted after it is killed;—in summer it
 “becomes sensibly worse after being a few
 “hours only out of the water;—and if they
 “are exposed but a few minutes to *the rays of*
 “*the sun* they are rendered totally useless.”

(y) p. 336, Appendix.

I shall

I shall now leave the Doctor to pursue his project of curing herrings by *heated air*, and return to indulge the noble Lord in his fondness for calculations, which we will apply to Ireland where they can operate with sufficient accuracy, at least to shew how far his Lordship's assertions carry consistency, or are founded in truth; and this we are the better enabled to do, as the salt consumed in Ireland is all imported, subject to duties and particular restrictions, and is from its moderate price less an object of fraud or deceit than in Great Britain, where its value is so much higher, and its manufacture more extensive."

The Commons Journals of Ireland afford us an accurate account of all the British and foreign salt that has been imported into the kingdom for several years past, from which we are also able to mark the progressive increase of importation, in the same proportion as the fisheries of Ireland increased or were successful.

A. D.	Tons of rock salt imported.	Tons of white salt imported.	Tons of for. s. imported.	Tot. tons of all sorts.
1774	15884	8931	9908	34723
1775	13145	8599	10635	32379
1776	14585	9331	14551	38468
1777	14107	9806	14324	38236
1778	16219	12029	11149	39397
1779	16121	10779	10141	37042
1780	16590	10000	14001	40591
1781	16056	13259	18663	47978
1782	15641	14025	13571	43238
1783	17517	15932	12501	45950

The reason why one year so much exceeds another in quantity, is principally owing to contrary winds, which often delay the salt which should arrive before Christmas until the beginning of the ensuing year. But if we take the average of these ten years, it appears to be 39800 tuns to supply the fisheries, the provision trade, and all the internal consumption of the kingdom of Ireland.

Now, if we deduct from the quantity above-mentioned for the salt provisions exported from Ireland, which the same authority will pretty nearly enable us to do, we shall find on the last of the above years, the account to stand as follows:

Salt

Salt Provisions exported from Ireland in the Year
1783.

212018	Barrels of beef	
112369	Do. pork	
1341	Tongues	
<hr/>		Cwt.
325728	Barrels at 78lb. salt per bar.	226846
40000	Barrels of beef and pork on Treasury orders for Government use, at 88lb. per barrel (z)	31428
6337	Flitches of bacon at 30lb.	
713	C. Hams at 40lb.	254
249485	C. Butter at 10lb. per C.	22275
48481	Barrels of Herrings at 140lb. per (a)	60601
58079	Hides at 28lb.	
2329	C. Cheese	
2530	Barrels Salmon	2700
1367	C. Heak	
85	B. Ling	
		<hr/>
		360321

Note, The quantity of salt used respectively in the above articles, is taken from the information of one of the most considerable merchants in the provision trade that we have in Ireland.

(z) The barrels made for Government were larger and packed looser than ordinary in order to take more salt.

(a) These herrings are generally packed in bulk at the Fishery and washed, repacked and pickled at Cork, for exportation with fresh salt.

	Cwt.
Brought over	360321
Foreign and British salt exported to Newfoundland and Philadelphia,	7823
Salt and salt provisions for ships use, taken by outward-bound ships at Cork and Waterford, also for the Coal ships, traders, India packets, &c. between Great Britain and Ireland, estimated at - -	20000
Salt taken by Scotch fishermen esti- mated at 1200 tuns - -	24000
	<hr/>
	C. 412144
	<hr/>
Exported or consumed in export pro- visions - - -	Tuns. 20607
	<hr/>
The average import for the years be- fore-mentioned - -	39800
Deduct salt for provisions, &c. as above	20607
	<hr/>
Remains for the whole internal con- sumption of Ireland -	19193

The regulation established in England, is,
that a tun of rock salt shall make a tun of white
salt, and an allowance is made on the rock salt
of

of 3cwt. 24lb. per tun, for that purpose, and so it is taken in the above statement; yet such part of it as is manufactured in Ireland by the assistance of sea water will, it must be allowed, have an increase, which we may estimate at 1000 tuns, and then the account will stand as follows:

Brought over	19193 tuns
Increase by sea water	1000 tuns
	<hr/>
	20193

Hence there remains, for the whole internal consumption of Ireland, including the manufactures of glass, soap, leather-dressing, &c. no more than 20,193 tuns; which if we divide amongst the inhabitants of Ireland, which are allowed to be above three millions, it will not furnish more than 15 lb. to each individual, and is even less than what the noble Lord esteems insufficient for the Scotch; and yet, with this allowance, the people of Ireland are amply supplied, although it is generally allowed there are no people in Europe, for their number, who consume more salt than the people of Ireland: for in the provision-trade, as well as in domestic uses, there is a superfluity of salt used, and frequently both salt and pickle which
have

have been once used, are rejected as useless; whereas in England and most other countries, the high price of salt enjoins a more strict economy.

If it should be objected, that there was a greater quantity of salt imported in the year 1783, than the average quantity used in the statement, I readily admit it; but it was not the salt imported in 1783 that cured the provisions exported in that year; it was the salt of the preceding year; and if we take into the account the increased stock of salt now kept in the kingdom, more than was at the beginning of the ten years we have stated, it will amply compensate for the extra imports of any particular year.

Look but seven years back, and we find Ireland importing near 80,000 barrels of foreign herrings, and those chiefly for home consumption; but in the last year of this statement we find scarce any foreign herrings imported. Her home consumption amply supplied, and above 48,000 barrels of Irish herrings exported; at the same time the internal consumption, owing to the plenty of fish taken on the different parts of her own coasts, increased to three times the
quantity

quantity that was consumed when she was obliged to import them.

We may learn therefore from the foregoing statement, that Ireland has no redundancy of salt, merely for the purpose of illicit trade; and at the same time how much the Noble Lord has exaggerated the consumption of England, in order to give colour to his unfair arguments.

But before we take leave of his calculations, let us for a moment suppose, in addition to what we have granted, that 10,000 tuns more of salt, according to his Lordship's representation, was smuggled or otherwise conveyed out of Ireland, and the remaining 10,193 tuns divided amongst its inhabitants, from which they would share about $7\frac{1}{2}$ lb. to each individual, which amply shews the illiberality and injustice of his Lordship's charges.

It seems, however, that the Noble Lord has other reasons, besides preventing smuggling, for recommending the prohibition of rock-salt to Ireland. He says, "It is a maxim in trade, "not to export a raw unmanufactured commodity, which can be manufactured at home to "advantage." This maxim comes with a very bad grace, if we could suppose his Lordship in

any measure acquainted with the trade that subsists between Great Britain and Ireland, or that England derives the very vitals of some of her principal manufactures from the raw materials of Ireland, which could be much more profitably manufactured at home.

And even in the article of rock-salt he seems but badly informed; for, as was observed before, the English possess a much cheaper material for making the white salt they export to Ireland, than rock-salt, which not only affords a profit, but has the further convenience, of being the ballast for all their pottery-ware and other light goods sent from Liverpool to Ireland. Yet the convenience and profit of this trade the Noble Lord would, with his usual wisdom, give up, without in any measure answering the purpose for which he intends it. For, as was observed before, while Ireland can import British white salt and foreign salt, the prohibition of rock-salt to Ireland can by no means operate to prevent smuggling.

Nor does it appear that the salt manufacturers of Cheshire, who possess both the rock-salt and white salt trade, and who may be presumed to know their own interest better than the Scotch can pretend to know it, were ever envious of
rock-

rock-salt being sent to Ireland, as they are well-acquainted that the salt manufacture of Ireland is more an object of safety, than an object of profit to the nation : by these manufactures the Irish have always a stock of salt in the kingdom to guard their fisheries, and provision-trade against the accidents of importation, long-prevailing contrary winds, and the caprice or monopoly of white salt proprietors. They are also enabled to adapt their manufactures to the different purposes of their trade ; for butter, which is one of their most considerable articles of export, they make a finer and cleaner salt, than any they can import ; and for their fisheries and provision-trade, by the help of seawater, they make a salt much superior to what they import from Liverpool, and often not inferior to what's so much boasted of in Holland.

The Noble Lord, with his usual liberality, considers Ireland also too favourably dealt with by England in the article of coals. But he is not aware, that it is by this policy *alone* that England secures to herself a profitable branch of trade. The Irish are possessed of numerous and extensive coal-mines, on the sea-coast and in other advantageous situations, some of which, if wrought with vigour, could supply her wants to the end of time. But while the west coast
of

of England continues to supply Ireland on the moderate terms which they do at present, the Irish collieries can rise but very slowly to any considerable degree of respect; and England must continue to enjoy her present lucrative trade, amounting to above 260,000*l.* per ann. in ready money, in which she employs above 26,000 tuns of her shipping, with a nursery for between two and three thousand seamen.

But recollecting that Ireland is a part of the British empire, the Noble Lord would not treat the Irish *quite* as foreigners, he would only recommend a duty of 8*s.* 7*d.* per London chaldron, near 8*s.* per tun, to be laid on all coals coming to Ireland; and as the Irish cry out for protecting duties, we presume he wishes to indulge them, at least the proprietors of collieries, in favour of whom his Lordship's wisdom would operate beyond all the bounties that is in the power of their own nation to grant.

Ireland, just now emerged from obscurity and oppression, full of internal vigour, and every day growing more jealous of her own interests, will not long remain regardless of the impolitick expenditure of 260,000*l.* per year, which may be converted into an extensive source of her own industry and wealth; and,
without

without any prophetic knowledge, I may predict, if any such measure ever takes place, that in less than fifty years after, it will scarcely be remembered that there ever had been a coal-trade from Great Britain to Ireland.

IMPROVE.

IMPROVEMENTS

IN THE

ART OF SALT MAKING.

HAVING so far taken notice of the noble Lord's political performance, we have next to attend to his improvement in the art of salt-making.

“ He (b) tells us, that if these improvements
“ are made general, we shall have no more com-
“ plaints of the rancid smell and taste of our
“ salt butter, nor of tainted ill-cured meat in
“ the navy.

“ And that our salt so improved, will be-
“ come an article of extensive trade to the
“ Northern countries.”

This we will readily grant him, and to the Southern countries too, if what he advances can be relied on.

(b) Thoughts, &c. p. 22.

But,

But, after raising our expectation to so high a pitch, unfortunately we find, upon a closer inspection, that his Lordship is but very imperfectly acquainted with this important subject, and almost a stranger to the salt, and modes of making salt practised in England, and other places, or he could never conceive that English salt made by a rational process, should want the purification that *his salt* made by the worst of all known processes stands in need of, which, as he tells us, contains one-tenth part of its weight of impure matter.

In a letter addressed to the Royal Society of Scotland, he tells them, (c) “ That the unfitness of home-made salt for the preservation of fish, meat, and butter, is sufficiently known, and that by a variety of experiments that he has made, it seems to be principally owing to the septic power of the Magnesia Salita contained therein.

“ That a method of purifying common salt without dissolving it in water, and decomposing the salts with earthy basis, by a fixed alkali, has hitherto been a desideratum which his Lordship has happily supplied, and is an object of great importance to the public.

(c) Thoughts on the Trade of Salt, &c. p. 16.

“ He,

He, (d) in another place tells us, “ that
 “ the salt made at Shields and on the Firth of
 “ Forth, contains two hundreds in the tun of
 “ what he calls *bitter putrescible salts*, aiding in-
 “ stead of resisting putrefaction.

That precipitating the *Magnesia Salita* and
Magnesia Vitriolata, with which it so much a-
 bounds, by an alkali, is not only expensive,
 but that different heterogeneous combinations
 would take place, such as Glauber Salt, Salt of
 Silvius, or vitriolated Tartar, in which his Lord-
 ship displays great chemical knowledge; but,
 forgetting however, that if such combinations
 really did take place, they remain fluid in the
 pans until crystallized by cold.

But in order to understand the subject and
 form a more perfect idea of the *improvement*, it
 will be necessary to take a short view of the na-
 ture and properties of these impure salts, and of
 the business of salt making in general.

The substances here distinguished by the names
Magnesia Salita and *Magnesia Vitriolata*, in
 the language of the late professor Bergman, is Mag-
 nesia Alba dissolved in the Marine Acid or Spirit
 of Salt in the first instance, and *Magnesia Alba*

dissolved in the Vitriolic Acid in the second instance, the latter of which composes *Epsom Salt*, (*Sal catharticus Amarus*) of the London Dispensatory. The first of these substances is with difficulty forced into a concrete form, and is so very deliquescent, that it liquefies again speedily upon the free admission of air.

These substances were known to Doctor Brownrigg, the latter of which he describes in his Treatise on Salt, by the name of Muriatic calcarious Salt, (e) though the term calcarious is misapplied, owing to an opinion that prevailed in his time, which was, that Magnesia was a calcarious earth, and could be converted into quick lime, the contrary of which is at this day well known to Chemists.

All the common salt that we know of in its original state, contains more or less of these substances, in sea water they abound, but withal are so very different in their natures from common salt, that they readily separate and never injure it, except thro' mismanagement, as will appear hereafter.

Water, whether hot or cold, dissolves common salt nearly in the same quantity, and will

(e) Brownrigg on Salt, p. 90.

arrive at a certain pitch of strength beyond which it cannot pass, and is then said to be fully saturated brine.

But hot water will dissolve more than double the quantity of bitter salts that cold water can, and if saturated brine mixed with these salts, be committed to the process of salt making, as the evaporation proceeds, the common salt crystallizes and falls to the bottom, while the bitter salts become more fluid by heat, and if continued to a very high degree of concentration, may be crystallized by cold.

At this period of the process salt is rendered *pure or impure, large or small, hard or soft*; for if the evaporation be conducted slowly, regular cubes are formed, and these again, if not agitated, uniting by their mutual attractions, form still larger cubes, hard, heavy and pure, in proportion to the slowness of the process, from which the other salts are totally excluded, except what adheres to the surface, which will soon liquefy, and speedily run off from hard grained salt. On the contrary, pursue violent boiling, and the salt will form small, light and spongy, with which, notwithstanding, if not boiled to a dry concrete, the bitter salts hold their

their union chiefly by adhesion, and from which they with difficulty separate as from any other soft or spongy substance.

On this principle depends the purity of foreign salt made of sea water, not more pure than that on the coast of Scotland; evaporated by the action of the sun and wind, from shallow ponds dug in the flat lands adjoining to the sea, or large tide rivers in Southern countries, yet this salt contains no other impurity, than a small quantity of earth, which may be disturbed from the bottom of those ponds in drawing it out, and that more or less in proportion to the firmness of the clay which composes the bottoms, and the dexterity of the persons employed to manage the process, while the remaining liquor is loaded with bitter salts, which are no farther capable of injuring the common salt than by adhering to its surface, from whence they again liquefy and run off; when the salt is collected into *heaps*, the *holds of ships*, or *stores*, and is generally pure by the time it comes to us. Thus may pure salt be made from impure materials by the action of the sun and air alone, and art can never take so sure a guide as Nature in her road to perfection.

The natural tendency of all salts to separate at the time of crystallization, appears in no instance stronger than in this before us; for Nature has, as it were, formed a barrier against their union, any farther than what was before mentioned, which may be verified in the following easy experiment.

Take salt thus slowly made by fire, and dissolve it in pure water, to which add a solution of pearl ashes, or any other alkali, and no change, or, if any, next to none will appear; hence we conclude the salt to be sufficiently pure. But to some of the same liquor, out of which this salt was just taken, add the same alkaline solution, and a precipitate will instantly take place, perhaps equal to a third part of the liquor examined, which proves what was urged before, that the impurity of the brine does not render the salt impure under judicious management.

The impure liquor we have just been speaking of, which remains after the making of salt, is usually called *bittern*, and holds in solution a large quantity of Magnesia, dissolved in different acids, together with a small quantity of Selenite, which is calcarious earth combined with the vitriolic acid.

And

And it has been a received opinion, that Magnesia, in every shape and form, is a septic or substance that hastens putrefaction. In this opinion the noble Lord has gone with the crowd; nor would we consider this as extraordinary, if he had not told us that he derived his knowledge from *experiments*. Now, experiments on the contrary prove *bittern* to be one of the most antiseptic substances that we know of, at least considerably more so than the purest common salt. For unfortunately common salt, however pure, is one of the least powerful antiseptics of all the saline substances.

This Sir John Pringle, and others after him, have sufficiently proved, whose experiments thereon are hereunto annexed. But that *bittern* or *Magnesia Salita* is an antiseptic, I dont find has been taken notice of by any writer; this, however, when forced into a concrete form, is in some measure decomposed, yet still retains its antiseptic quality though somewhat diminished, and will, if joined with salt, or used alone in saving meat, be so far from promoting putrefaction, as the noble Lord asserts, that it renders it hard, almost to the consistence of wood, which will be more fully taken notice of, in some experiments upon that subject hereunto subjoined.

And

And although I don't contend against purifying salt from these and every other foreign mixture, yet, I shall undertake to shew that the noble Lord has erected his whole fabrick upon mistaken principles, and that other essential properties are requisite in salt for saving provisions as well as purity.

There is nothing in the business of salt making better known, than that the same precipitate boiling, which makes salt retain its impurities, by rendering it spongy and fine, also injures its antiseptic quality, and renders it altogether unfit for saving provisions. And all these concerned in the provision trade, find it indispensibly necessary to provide salt, large grained, and sufficiently hard to cut the cellular membrane in rubbing meat, and to force out all the bubbles of air contained therein.

Although foreign salt is in general held superior to home-made salt, for some of these purposes, it is sufficiently known to those who understand the principles of salt making, that salt can be made by art, more pure, heavier, and more antiseptic, than the best foreign salt imported.

The

The Dutch have taken the most pains to arrive at this perfection, *not by making it impure and washing it*, but by making it perfect in the first operation, which for particular purposes, they extend to the length of *three* and sometimes to *six days*, and distinguish it by the names of salt of *three days* or *six days boiling*; nor is the supposed *secret* in seasoning their brine, which his Lordship takes notice of, worthy of the notice of a Chemist, as all little secrets of that kind must appear trivial to a person moderately skilled in that part of Chemistry called crystallization, and especially to its modern improvements.

And even the Dutch owe the good quality of their salt rather to their slow turf fires and very large pans, than to any scientific knowledge they possess; for they formerly got some conceits about purity and strength of salt, which led them into such extraordinary and unnecessary expence in their manufactures; that foreign salt is every day, as far as their law permits, superseding the use of their manufactured salt. But as the design of these pages is not to enter farther into the business of *salt making*, than to enable the reader to compare these principles which are already known, with what is offered to the public as an *improvement*, and withall to judge

judge whether it is more eligible to make salt pure and effectual at one operation, or by making it impure, to render such a brewery necessary as we are now to advert to.

The NEW METHOD of PURIFYING SALT.

“ TAKE a vessel of a conical figure, with a
 “ hole in the apex or small end of it; put it
 “ near the fire with the bottom or base upper-
 “ most, or fix it in such a manner that it may
 “ be moderately heated, by a *stove* or *stew* go-
 “ ing round it; fill it with salt, and take a
 “ twentieth part of the salt contained in the
 “ vessel, and dissolve it in its proper proportion
 “ of water in an iron pan; let it boil, and
 “ pour it when hot upon the surface of the
 “ salt in the conical vessel; the hot and fully
 “ saturated solution will dissolve no more sea-
 “ salt, but will as it descends and filtrates
 “ through the salt in the vessel, liquify or dis-
 “ solve the *magnesia salita* and *magnesia vitriolata*
 “ which will drop out at the aperture in the
 “ small end of the conical vessel; after that the
 “ liquor has ceased to drop, take a twentieth
 “ part more of the salt contained in the vessel,
 “ dissolve it in water, proceed as aforesaid,
 “ pour

“ pour it on the salt, and repeat the same with
 “ fresh quantities of salt out of the vessel, until
 “ the remaining salt be of the required purity ;
 “ each operation renders the salt $4\frac{1}{2}$ times
 “ purer than it was before ; its purity throw-
 “ ing off the small fractional parts, in each mul-
 “ tiplication, will increase in the following
 “ progression :

“ First operation,	—	4,	5
“ Second ditto	—	—	20
“ Third ditto	—		91
“ Fourth ditto	—	410	
“ Fifth ditto	—	1845	

This is the process communicated by Lord Dondonald to the Royal Society of Scotland, which he tells them he has used for purifying *his salt*, and seems to be taken from the late Professor Bergman's Chemistry, (Vol. I. page 229, Analysis of Sea-water,) where he recommends hot water to be used to separate the bitter salts from the sea-salt, *for* Magnesia Salita, says he, *is very easily dissolved in boiling water, whereas of pure common salt scarcely any more is taken up by hot than by cold water.*

Baron Bergman, in analyzing sea-water, evaporated his bittern to a dry concrete, upon
 H which

which he poured hot water ; this instantly became saturated brine, and could dissolve no more except the bitter salts ; whereas the Noble Lord, with less address, took a portion of salt out to make brine in another vessel, and returned it again, which might have been performed by pouring the boiling water on his conical vessel, as the water *could* dissolve but the *same quantity* of salt, whether in or out of the vessel.

REMARKS *on the foregoing* PROCESS.

A vessel of a conical shape, we are told, must be provided, of iron it is presumed, as it is to sustain the external application of fire. The size is not mentioned, but we will suppose one to hold a tun of salt ; and a tun of light salt will fully occupy 400 gallons.—From thence one hundred weight is to be taken and made into saturated brine, in a separate vessel, which will require about 36 wine gallons of water ; this,

Note. The Noble Lord calls this his invention, and we *somewhere* find him complimenting himself for his liberality, in communicating it to the public without availing himself of the benefit of a *patent*, or obtaining a *parliamentary reward*.

at

at boiling heat, is to be poured on the salt to be purified, which will scarcely appear moistened by it, and is to be permitted to filtrate through.—This cannot be effected in so large a body of soft salt in less time than twenty-four hours ;—it is to be repeated three times, which will require as many days in arriving at what is called the purity of bay-salt.—If a tun of salt only is manufactured in the day, three of these great caldrons will be necessary to keep pace with this petty manufacture ; and if we apply *this improvement* to some of the great works of England, forty or fifty of such caldrons would be insufficient. This perplexed operation, his Lordship tells us, may be performed for $1\frac{1}{2}$ d. per bushel, or 5s. per tun.—Perhaps at the Frith of Forth, or Shields, where coals are cheap, it may ; but at Limington, 5s. worth of coals would not keep his great vessel warm for the length of time a single charge would require ;—but, in addition to the 5s. per tun, we have still a much more considerable loss to attend to.

He does not inform us how he disposes of his impure liquor ; if he adds it to the next pan of salt making in succession, its purity must decrease, in the same ratio that the purity of his other salt increases, until it becomes a complete
mass

mass of impurity.—And if he throws it away, as we have reason to think he does, there is a loss of 13 and one-third bushels upon purifying every tun, at his most moderate degree of purification; and as he informs us also, that this sort of salt, impure as it is, stands the maker at the Frith of Forth in 11d. per bushel, we are enabled to determine what is lost upon purifying each tun.

Forty Bushels of salt
to be purified, from
which two bushels
are to be taken, at
each of three operations,
— 6 Bushels.

Each tun loses 1-10th
part, or 4 bushels
of impure salts,
washed away in the
operation, — 4

10 at 11d. per Bl. $\begin{matrix} s. & d. \\ 8 & 2 \end{matrix}$

Hence 40 bushels are
reduced to 30, and
require 10 purified
bushels, or a third
of the above, to
make up a tun — $3\frac{1}{2}$ — 2 $8\frac{1}{2}$

Three - halfpence per
bushel, or 5s. per
tun on the purified
salt, for labour,
coals, utensils, &c. — — 5 0

15 10 $\frac{1}{2}$

Hence the loss upon each tun of salt purified is 15s. 10½d. and withal we have a fine spungy salt, totally unfit for saving provisions.

His Lordship gives a pompous account of the extent of his purification, which may justly be esteemed original; for by dissolving a portion of his impure salt, in order to purify the remainder, he forms an infinite series, with which he may proceed *ad infinitum*; and altho' he can never arrive at perfect purity, yet may soon arrive at the high-sounding number of being 1845 times more pure than it was at first, when it contained one-tenth of its whole quantity of impure matter. But if one-tenth be expelled, and nine-tenths arrive at perfect purity, how does it follow from thence that it becomes 10 times—100 times—1845 times, or any certain number of times more pure than it was before the operation? Or we may say, in other words, that the art of comparing number or quantity with nothing, has till now been unknown, and may be considered as a second desideratum which the noble Lord has supplied.

Or thus if we ask how many times a pound sterling is more than a shilling, the answer is obvious. But if we ask how many times a pound sterling is more than nothing, we must resort to his Lordship for an answer.

It

It might be esteemed an act of injustice to pass by any part of the noble Lord's improvements unnoticed. I must therefore observe, that he conceives Magnesia to subsist in all salt manufactured by fire in an uncombined state. To obviate which he advises a quantity of spirit of salt to be added in the first process of purification, in order to dissolve the Magnesia, and send it adrift with the rest of its kindred.

However specious this may appear at first sight, upon enquiry, it will be found, the disorder is merely ideal and the remedy useless, and expensive ; for the quantity of spirit of salt which could operate on so large a body of salt, would be an enormous addition to the expence we have before stated, and have this further inconvenience, that it would render the iron vessel so rusty that it would discolour half the salt it contained.

But Magnesia combined, with Mineral acid is not so easily decomposed as our author imagines, even Magnesia Salita when forced into a dry concrete, shews very little sign of decomposition.

It is now near forty years since Doctor Brownrigg wrote his elegant treatise upon salt-making.

making. And notwithstanding some defects in his theory, which the improved state of modern chemistry at this day renders conspicuous, it still contains an abundance of good sense and information, which some of our modern writers are totally strangers to. He lays it down as an established maxim, that violent boiling renders salt unfit for curing provisions, nor does the experience of so many years in any instance contradict him. Yet we lately find another noble Lord (a) eminently skilled in arts and manufactures, advancing, "that the salt of Ireland is "weaker than English salt, *because it is not so much boiled*, and that England must always "have an advantage over Ireland in the goodness of that article, through her greater "abundance of coal."

Nor are the opinions of our author marked with much better information, when he advances, that the unsuitness of home-made salt for saving provisions, is owing to its being combined with certain septic substances, which substances, upon enquiry, we find to be more antiseptic than even pure salt itself—regardless at the same time of any particular mode of making, or other qualities, provided it can afterwards be

(a) Lord Sheffield's Observations on the Manufactures of Ireland, page 131.

freed from these mixtures, which he imagines to be injurious.

How foreign is this from the practice of the Dutch, who by a rational imitation of nature, have approached the nearest to perfection of any nation in Europe, yet, as was observed before, they have gone into an unnecessary expence in purchasing the salt of Spain or Portugal, preferable to rock salt, for the purpose of refining, when, by a more perfect knowledge of the subject, we are taught that any good quality which salt can derive from sea water, may be also communicated by art.

England, so eminently possessed of the advantages of rock salt and coals, might become, under such management, manufacturers of salt of superior quality to most other countries; for where the materials are so cheap as in England, various improvements may be made towards attaining this desirable end. But in Holland, Ireland, or any country where the materials are dear, such improvements tend to render the price of salt higher, and must therefore necessarily be supplanted by the importation of foreign salt.

At Northwich in Cheshire they manufacture considerable quantities of flow made coarse salt, which they call fishery salt or navy salt. This salt will stand every test of purity, yet is neither so heavy nor so antiseptic as S'Ubes salt, nor indeed so much so as salt of Irish manufacture, against which it has been frequently tried; but both these defects might, without much difficulty, be surmounted; and this salt furnishes an incontestible proof that something more is wanting to render salt antiseptic than purity alone.

At Lemington there are large quantities of *good* salt made *entirely* from sea water, which may be considered as a good pattern for the noble Lord's imitation; for although he is not able to improve the manufacture as it is there practiced, he might, by pursuing the same, effect what would be more to his purpose, to improve his own skill. They there evaporate the sea water to a considerable strength, by the help of the sun, and finish it with very high priced coals, but are attended with this inconvenience that they are a considerable part of the year idle. *He*, on the contrary, evaporates by coals at a very low price, and has the advantage of being able to work all the year round. *They* separate their bitter salts by a rational and easy process, and convert them to a profitable purpose

pose in making purging salts. *His Lordship*, on the contrary, boils these bitter salts up with his sea salt, into a mass of impurity, and then by his *improved* process, separates them again at the loss of a fourth part of his whole produce, and the other expences which we have before taken notice of.

Having thus stated the general principles and practice of salt making, contrasted with what the noble Peer has offered as an improvement, the conclusions that naturally follow are,

That his Lordship's process for making salt is not a good one, and his salt, according to his own description, the *worst* that is made in Europe.

That his improvement is but a partial remedy for defects that might have been more conveniently *avoided* than *cured*, and is withall, operose, expensive, tedious and wasteful.


That salt made by his method, however purified, is inferior to well made salt, and is totally unfit for the fishery or provision trade.

That salt made by a constant process stands in no need of purification.


And

And finally, that whatever obligations might have been due to his Lordship from the manufacturers of salt, for his good intentions to improve *the art*, are totally cancelled by his endeavours to embarrass his brethren, the salt makers of England, with an act of parliament, to enforce a process, so troublesome, expensive, and inadequate to the purpose for which it was intended.

A comparative view of Sea Salt, considered as an Antiseptic, with other Saline substances, from the Experiments of Sir John Pringle, Bart.

Sea Salt	—	1 as a standard
 Sal Gem	—	1 +
Tartar vitriolated		2
Spiritus Mindereri		2
Tartarus Solubilis		2
Sal Diureticus		2 +
Crude Sal Ammoniac		3
Saline mixture		3
Nitre	—	4 +
Salt of Hartshorn		4 +
Salt of Wormwood		4 +
Borax	—	12 +
Salt of Amber		20 +
Alum	—	30 +

+ This character is to shew that the substance is stronger than the number set down by some fractions, except in the three last, where it imports being stronger by some units.

 It does not appear that Sir John was in possession of the strongest kind of salt, by Sal Gem appearing more antiseptic. The contrary of which will appear in the following experiments.

Expe-

EXPERIMENTS to determine the Antiseptic Power of different Kinds of Salt and Saline Substances.

Ounce of lean Ox-beef, with Three Ounces of Water, was put into several wide-mouthed Bottles, and the Quantities annexed, of the Substances to be examined, were added and put into a Stove 14th March. Thermom. 60° to 80°.

Water, as a Standard	16	17	18	19	20	21	22	23
Clear Sal Gem $\frac{1}{4}$ oz.	changing	fetid	changing	slightly fetid	very fetid			
St. Ube's Salt $\frac{1}{4}$ oz.	no change	no change	no change	no change	changing	fetid		
St. Ube's Salt $\frac{1}{4}$ Bittern - $\frac{1}{4}$	no change	no change	no change	no change	no change	no change	no change	slightly fetid
Northwich coarse Salt, $\frac{1}{4}$	no change	no change	no change	slightly fetid	very fetid			
Course heavy Salt made in Ringfend $\frac{1}{4}$	no change	no change	no change	no change	no change	changing	slightly fetid	
Common soft Salt $\frac{1}{4}$	no change	no change	no change	fetid				
Salt of Silviuſ $\frac{1}{4}$	fetid	very fetid						

R E M A R K S

ON THE

F O R E G O I N G T A B L E.

- 1 Water began to change on the 3d day.
- 2 Sal Gem changed on the 5th day.
- 3 St. Ubes Salt on the 7th day.
- 4 Do. with Bittern, on the 11th day.
- 5 Northwich coarse salt, remarkably pure, changed on the 6th day.
- 6 * Coarse Ringsend salt changed on the 8th day.
- 7 Ordinary fine salt changed on the 5th day.
- 8 † Salt of Silvius alone seemed to promote putrefaction, and changed before water.

* Salt perfectly pure, heavy and hard, made for experiment.

† Salt made with the vegetable instead of the mineral alkali.

Con-

Continuation of the former Experiments.

SECOND TABLE.

Thermom. 56° 60° 74°.

2d April,	5	6	7	8	9	10	11	12
1. 1 Oz. Beef and 3 oz. water	changing	fetid						
2. The same with St. Ube's salt, $\frac{1}{4}$ oz.	sweet	sweet	changing	fetid	sweet	sweet	changing	A little fetid
3. St. Ube's Salt, with $\frac{1}{4}$ oz. bitter	sweet	sweet	sweet	sweet	sweet	sweet		
4. Ringfend course salt $\frac{1}{4}$ oz.	sweet	sweet	sweet	changing	slightly fetid	sweet		
5. Do. with 27 grains falired magnesia	sweet	sweet	sweet	sweet	sweet	sweet	sweet	sweet
6. Do. with 27 grains Vit. magnesia	sweet	sweet	sweet	slightly fetid				
7. Salt of hartshorn, 27 grains	sweet very red	sweet very red	fetid					exceeding fetid, of an uncom. ill smell
8. Alum, 4 grains	sweet & pale	sweet	sweet	sweet	sweet	sweet	neglected	

R E M A R K S


ON THE

S E C O N D T A B L E.

The first two or three days on which no change happened, are omitted for want of room.

No.

- 1 The standard changed the 4th day.
- 2 St. Ube's Salt changed the 6th day.
- 3 St. Ube's Salt, with $\frac{1}{4}$ oz. Bittern changed the 10th day.
- 4 Ringfend coarse Salt changed the 7th day. *
- 5 Ringfend coarse Salt, with 27 gr. Mag. Salita continued sweet until it was neglected to be observed.
- 6 Ringfend coarse Salt, with 27 gr. Vit. Magnesia changed the 7th day, and appears to have added nothing.
- 7 Salt of Hartshorn, the fourth part of the $\frac{1}{4}$ oz. of Salt changed the 6th day.
- 8 Alum, Sir John Pringle's prop. as well as the former, continued long sweet, but then became more offensive than any of the rest.

 Hence it appears from the third and fifth experiments, that Magnesia Salita is highly antiseptic.

* This Salt was made for experiments of the highest degree of purity, yet larger, heavier, and harder than S'Ube's Salt.

Experiments Continued.

THIRD TABLE.

Weather Cold and Windy.

Thermom. 66°.

Feb. 20.	23	24	25	26	27	28	29
1. 1 Oz. Beef and 3oz. water, Standard	changing	fetid					
2. Do and St. Ube's Salt, $\frac{1}{4}$ oz.	sweet	sweet	sweet	sweet	changing	fetid	
3. St. Ube's Salt $\frac{1}{4}$ & Sal. Mag. 25 gr.	sweet	sweet	sweet	sweet	sweet	changing	slightly fetid
4. Salit. Mag. alone, $\frac{1}{4}$ oz.	sweet	sweet	sweet	sweet	sweet	musty	musty
5. Bittern $\frac{3}{4}$ oz.	{ sweet & pale	sweet	sweet	sweet	sweet	sweet	sweet
6. Salt purified by Ld. Dondonald's method, $\frac{1}{4}$ oz.	sweet	sweet	changing	slightly fetid			sweet 8th March flesh-red.
7. The same salt unwashed, $\frac{1}{4}$ oz.	sweet	sweet	sweet	changing pungent	slightly fetid		

R E M A R K S

O N T H E

T H I R D T A B L E.

No.

- 1 Standard changed the 4th day.
- 2 S'Ube's Salt changed the 8th day.
- 3 S'Ube's Salt, with 25 grains of Mag. Salita the 9th day.
- 4 Magnesia Salita alone grew musty, but not putrid till neglected.
- 5 The Bittern continued 37 days in the stove, was then musty but not putrid, and a pale red, $\frac{3}{4}$ oz. was used as it was fluid.
- 6 Ld. Dondonald's purified Salt always changed a day or two in this and other experiments, before the same Salt taken unpurified.

N. B. These are a part of a course of more extensive experiments, that were entered into in order to throw light on this subject, and will probably appear at some future day.

It is necessary to observe, in repeating these experiments, that scarce any distinct change can be observed if too much heat is used.

And that flesh, perfectly sweet, be used otherwise, all the changes will be nearly at the same time.

P O S T.

P O S T S C R I P T.

SINCE the writing of the foregoing sheets, a second edition of Lord Dondonald's Pamphlet has appeared, in which he treats the Irish with less illiberality than in the former one; yet as he has before exhibited those unjust and invidious charges to public view, and has not retracted them in the latter, the author hereof does not consider him entitled, to the relaxation of any strictures on his former work, contained in the foregoing sheets.

But as his second publication has taken a new road, and applies principally to the business of finance, in which Ireland is not immediately concerned, we shall make but a few remarks thereon, and those principally to shew that the same spirit of misrepresentation, which so strongly marks his former production, when approaching to any favourite point, also runs through every part of the present performance, of which, a stronger instance need not be given, than the quantity of Bread he would make the English to consume, in order to support his calculations.

He

He states, that a pound of salt is the proper proportion for 56lb. of flour, and that $1\frac{1}{4}$ lb. of flour is a *moderate daily allowance* for each individual in England; and we know that $1\frac{1}{4}$ lb. or 20 ounces of flour will make at least 26oz. of bread, and amount to about a quarter and one third, or 608lb. of wheat, for each person, man, woman, and child, in the year ———, which, to make into bread, he says, takes 8 pounds of salt; this he calculates the duty of, to near the whole neat salt revenue of England, and withal disposes of more than double the quantity of wheat that ever grew in one year in England; —*here is the hobby horse*, and the reason for allowing all the good people of England such plenty of bread.

How different is his Lordship's calculations from our writers on political arithmetic, who state a quarter of wheat as the proper allowance of three persons, upon an average, for the year round, or 7 ounces per day to each individual, and this about the year 1750, when potatoes were much less the food of the kingdom than they are at present. But Doctor Brakenberg, or those other political writers, had no favourite object to induce them to mislead the public.

His

His Lordship gives an account of the salt duties, and consumption of salt in the different divisions of France, from the writings of Mr. Necker, the famous French financier, which he supposes favours his idea of an immense consumption of salt in England; and as it is a matter of some curiosity, I shall also introduce it, *in an English dress*, with remarks thereon, and submit to the judgment of the reader how far it makes for his Lordship's favourite hypothesis.

* Quintal, 100 French or 108 English pounds.

† Gabels, the Salt Tax.

DIVISIONS OF FRANCE.	Number of Inhabitants.	* Quintals of salt consumed in each division.	Price per Quintal.	Average Consumption by each Person.
The provinces of the Great Gabels †	8,300,000	760,000	1. s. d. 2 14 3	1b. 9½
The provinces of the Little Gabels	4,600,000	540,000	1 9 7	11¾
The provinces of the Salt-pits	1,960,000	275,000	19 1½	14
The free provinces	4,730,000	830,000	1s. 9d. to 7s. 10d.	18
The provinces that have re-deemed themselves	4,625,000	830,000	5s. 3d. to 10s. 6d.	18
The province of Quart Bouillon	585,000	115,000	14s.	19½
	24,800,000	3,350,000		

Note. His Lordship adds, by mistake I suppose, 100,000 quintals to the Little Gabels, more than they consumed according to Necker's account.

* Quintal, 100 French or 108 English pounds.

† Gabels, the Salt Tax.

The salt tax of France being so unequally levied, is an object of much complaint, and is the constant source of smuggling, seizures and punishments. Yet from certain original privileges enjoyed by particular provinces, it is found a difficult matter to be redressed without the most flagrant violation of public faith. Those called *free provinces* have never been subject to the gabel duties ; and many of them are principalities, towns, and small districts, included within the provinces subject to the Gabels ; and Mr. Necker acknowledges the consumption of salt in these provinces is very uncertain. The King collects a small duty on the fabrication of salt destined for the use of the free provinces, but it is too uncertain to depend on for calculations.

The redeemed provinces enjoy this immunity from having paid for it 1,750,000 livres in the reign of Henry II. They pay but a moderate duty under the name of *Transport duties of the river Charente*, &c. and it is equally uncertain, as in the free provinces, what quantity of salt they consume, as they are constantly smuggling salt to the provinces of the Gabels.

The Province of Quart-Bouillon is a part of Lower Normandy, which takes its name from being formerly obliged to give the King one-fourth part of all the salt that they made, and to lodge it in his warehouses, free of all charges ; the name is still retained though the method has

been altered, and the King's share converted into an equivalent duty.

Having so far explained the nature and cause of the inequality of this tax, we are next to observe, that in the provinces of the Grand Gabels, a district equal in population to all England; where salt is dear, they consume but 9lb. $\frac{1}{2}$; and in the petty Gabels, where its price is more moderate, they consume but 11 $\frac{3}{4}$ lb.; but in these provinces where it is cheapest, and from whence it is constantly smuggled, they appear to consume 18 or 19lb. for each person; † hence if we expect to arrive at any thing like truth, we must take the average consumption of the whole kingdom, which appears to be about 13 $\frac{1}{2}$ lb. and is nearly the same quantity that Mr. Necker supposed would be consumed, if the salt tax was equalized in France.

But let us mark how the noble Lord states the matter. He selects, as most suitable to *his* purpose, the *Pays de Quart Bouillon*, a small district, in the midst of the grand Gabels, where salt is about a fourth part of the price that it sells for in the adjoining provinces, and where there

† There is an obligation, called the Devour of the Gabel, imposed upon each person about seven years of age, to consume 7lb. of salt.

is the highest incitement to smuggling, and the quantity smuggled must necessarily average the higher by the smallness of the district ; here indeed they consume $19\frac{1}{2}$ lb. of salt, which the noble Lord thinks proper to take for the average quantity consumed in the kingdom, and concludes from thence, that as the English use more animal food than the French, it may be reckoned *a fair estimate*, to allow the people of England 25lb. of salt to each individual. But had the noble Lord taken $13\frac{1}{2}$ lb. the real average of France, he must by the same kind of reasoning, have reduced the average consumption of England to less than 19lb. which there is reason to think would have been considerably too much. (a)

It has been all along the favourite object of the noble Lord, that England should appear to consume an immensity of salt, more than she

(a) Mr. Young, whose writings and knowledge of these subjects merit so much respect, relates, in a late publication, that in the year 1784, his family consisting of ten in number, as appears by a correct account to have consumed 125lb. of salt, which is 12lb. 8oz. to each individual.

And that his neighbour's family, consisting of twenty persons, consumed 308lb. which is 15lb. 6oz. to each ; and I believe it will be allowed that people of this rank consume more salt for their numbers than the lower classes of people who are ten times more numerous.

has

has occasion for, which idea, with singular address, he shapes to answer different purposes. First, when each person was to consume $33\frac{1}{2}$ lb. it served him to calculate how much salt was smuggled annually from Ireland to Scotland, in order that the Scotch should also consume $33\frac{1}{2}$ lb. each person.

And this to shew that the Irish should get no rock salt,—When each individual in England daily eat 20 ounces of flour or 26 ounces of bread—the salt they consumed should nearly pay the whole salt duty of the nation.

And when the *Pays de Quart-Bouillon* consumed by eating and supplying their neighbours $19\frac{1}{2}$ lb. of salt, each individual in England must, by a fair estimate, consumed 25 lb. of salt.

*This to shew the necessity of a commutation tax—*But if a man makes truth the basis of his writings, he can never be reduced to the necessity of supporting his case by offering such arguments as these. However, having already continued this subject farther than was intended, I shall leave the noble Lord to pursue or relinquish his illusion, according to his fancy, and shall close with a few remarks from Mr. Necker, worthy of the reader's notice.

He

He says that the salt duties of France in the year 1784, amounted to 60 millions of livres, or about 2,626,262l. sterl. That the King pays 7,650,000 livres for purchase, commission, measurement, transport and freight.

That the corps de Bregades, appointed to protect the duties, amount to 23,000 men.

That there are 3,700 seizures within doors.

And that there has been arrested yearly on the high-ways and other places, especially on the frontiers of Brittany, and in the directorships of Saval and Anger.

2,000 men.

1,800 women.

6,600 children.

1,100 horses.

50 wheeled carriages.

The greatest part of the women and children are soon released—that the number of prisoners are usually from 17 to 1800; and that about 300 are sent to the Gallies annually, for smuggling salt and tobacco.

F I N I S.



